

Claims

This listing of claims will replace all prior versions, and listings, of claims in the application.

1. (previously presented) Apparatus for filtering and entrapping debris from a vascular system of a patient, said apparatus comprising:
a filter device being sized to allow blood flow therethrough and to restrict passage of debris therethrough, and said filter device having a first given perimeter, a proximal side and a distal side; and
wherein said filtering device captures debris carried in a first direction of blood flow from said proximal side to said distal side thereof on said proximal side of said filter device;
an entrapment device having a proximal side and a distal side, said entrapment device including at least one selective opening of a size to allow passage of debris and blood therethrough, said selective opening allowing passage of blood and debris carried therein therethrough in said first direction of blood flow from said proximal side to said distal side of said entrapment device and from said entrapment device to said filtering device, said selective opening having a restriction element that is operatively provided to change a size of the selective opening so as to prevent debris passage back through said selective opening from said distal side to said proximal side of said entrapment device in a second direction opposite to said first direction, said selective opening forming a second given perimeter, and said first given perimeter and said second given perimeter being deployable within the vascular system so as to form a chamber between said distal side of said entrapment device and said proximal side of said filtering device with respect to blood flow through both of said entrapment device and said filtering device;

wherein said entrapment mechanism allows blood and debris carried therein therethrough in said first direction of blood flow, said filtering device allows blood therethrough in said first direction of blood flow, and said restriction element prevents debris back through said selective opening in said second direction of blood flow opposite to said first direction of blood flow such that said chamber entraps the filtered debris received therein for debris removal from the vascular system of the patient.

2. (original) Apparatus according to claim 1 further comprising an introduction mechanism including a cannula to insert said filter device and said entrapment mechanism into the vascular system of the patient.

3. (previously presented)Apparatus according to claim 1 further comprising a deployable frame being selectively configurable to adjustably size said filter device and entrapment device between a first position and a second position.

4. (original) Apparatus according to claim 3 further comprising a compliant outer cuff being configured to surround said deployable frame, and to make contact with an inner wall of the vascular system of the patient.

5. (original) Apparatus according to claim 4 wherein said compliant outer cuff passively surrounds said deployable frame.

6. (original) Apparatus according to claim 4 wherein said compliant outer cuff is radially expandable.

7. (original) Apparatus according to claim 1 wherein said filter device comprises a filter bag.

8. (previously presented)Apparatus according to claim 1 wherein said entrapment device comprises at least one entrapment leaflet attached on said distal side of said entrapment device and contacting a distal surface on said distal side of said entrapment device such that said at least one entrapment leaflet can be positioned away from said distal surface of said entrapment device to allow blood and debris in said first direction of blood flow therethrough and said at least one entrapment leaflet can be positioned toward said distal surface of said entrapment device to prevent debris in said second direction of blood flow therethrough.

9. (previously presented)Apparatus according to claim 8 wherein said at least one entrapment leaflet comprises a filter material so as to allow blood, and to prevent debris, in said second direction of blood flow back through said entrapment device.

10. (previously presented)Apparatus according to claim 8 wherein said at least one entrapment leaflet comprises a non-porous material so as to prevent blood and debris in said second direction of blood flow back through said entrapment device.

11. (previously presented)Apparatus according to claim 8 further comprising a perimeter seal extending about the interior of said entrapment device so as to provide selectable engagement with said at least one entrapment leaflet in said second direction of blood flow.

12. (previously presented) Apparatus according to claim 8 wherein said distal surface of said entrapment device is provided by a piece of coarse mesh extending across the interior of said entrapment device so as to provide selectable engagement with said at least one entrapment leaflet in said second direction of blood flow.

13. (previously presented) Apparatus according to claim 8 wherein said distal surface of said entrapment device is provided by at least one co-aprtation strand extending across the interior of said entrapment device so as to provide selectable engagement with said at least one entrapment leaflet in said second direction of blood flow.

14. (original) Apparatus according to claim 1 wherein said first direction of blood flow is the direction of systolic blood flow and said second direction of blood flow is the direction of diastolic blood flow.

15. (original) Apparatus according to claim 1 wherein said first direction of blood flow is the direction of diastolic blood flow and said second direction of blood flow is the direction of systolic blood flow.

16. (canceled)

17. (canceled)

19. (canceled)

20. (canceled)